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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/698,040

10/30/2003

David Hait

5013.005

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7590 04/29/2008  
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Suite 217  
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EXAMINER

SEE, CAROL A

ART UNIT

PAPER NUMBER

3696

MAIL DATE

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04/29/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/698,040	<b>Applicant(s)</b> HAIT, DAVID	
	<b>Examiner</b> Carol See	<b>Art Unit</b> 3696	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 February 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

1. Responsive to applicant's Arguments/Remarks, submitted 2/1/2008, Examiner acknowledges applicant's amendments to claims 1- 8.
2. Examiner's previous objections to the specification, claims and drawings have been withdrawn because applicant has made requested changes per applicant's remarks dated 2/1/2008. However, Applicant's currently amended claims necessitate additional rejections under 35 USC 112, second paragraph. See claim rejections under 35 USC 112 below.

### ***Priority***

3. Applicant's claim for the benefit of a prior-filed application under 35 U.S.C. 119(e) or under 35 U.S.C. 120, 121, or 365(c) is acknowledged. Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 120 as follows:

The later-filed application must be an application for a patent for an invention which is also disclosed in the prior application (the parent or original nonprovisional application or provisional application). The disclosure of the invention in the parent application and in the later-filed application must be sufficient to comply with the requirements of the first paragraph of 35 U.S.C. 112. See *Transco Products, Inc. v. Performance Contracting, Inc.*, 38 F.3d 551, 32 USPQ2d 1077 (Fed. Cir. 1994).

The disclosure of the prior-filed application, Application No. 60/422,231 fails to provide adequate support or enablement in the manner provided by the first paragraph of 35 U.S.C. 112 for one or more claims of this application. Accordingly, claims 5-8 are not entitled to the benefit of the prior application; therefore, claims 5-8 are only granted a priority date of October 30, 2003 (the filing date of Applicant's non-provisional application).

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1 and 5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 2-4 are rejected as depending from claim 1. Claims 6-8 are rejected as depending from claim 5.

Claim 1 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicant has amended claims to include the recitation "wherein said device determines the implied volatility by division of the period until option expiration into sub-periods, wherein period to expiration is subdivided into a number of time periods and possible underlying asset price values, and by calculation of

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a node vega, said node vega being the exact derivative of the option price with respect to the volatility at the end of at least one of said subperiods and at one or more of said underlying asset price values.” Applicant’s inclusion of the underlined phrases fails to find support in applicant’s specification as originally filed, thus constituting new matter.

Further, as to claim 1, the meaning of the “wherein” clause cited above is unclear. Does the device determine possible underlying price values or divide the period into possible price values? Further, applicant’s definition of “node vega” is unclear and the difference between applicant’s claimed “new” invention and the “vega,” both used to determine implied volatility remains unclear. How the “new” invention is used to determine implied volatility remains unclear. Examiner respectfully notes that, in the specification, applicant appears to use the terms “vega” and “node vega” interchangeably. For example, although applicant refers to node vega as an exact derivative, applicant represents the term in equation form (Equation 6) as a partial derivative.

Further, in claim 1, the meaning of “possible underlying asset price values” is unclear.

Further, claim 1 recites a machine in the preamble and a computing device – essentially, an apparatus claim, which could encompass a wide range of “devices” - yet fails to provide any structure for that apparatus.

As to claim 5, the meanings of the terms of the equation are not defined within the body of the claim.

***Claim Rejections - 35 USC § 101***

6. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7. Claims 1 - 8 are rejected under 35 U.S.C. 101 because the claimed invention pre-empts a judicial exception.

Under the statutory requirement of 35 U.S.C. § 101, a claimed invention must produce a useful, concrete, and tangible result. For a claim to be useful, it must yield a result that is specific, substantial, and credible (MPEP § 2107). A concrete result is one that is substantially repeatable, i.e., it produces substantially the same result over and over again (*In re Swartz*, 232 F.3d 862, 864, 56 USPQ2d 1703, 1704 (Fed. Cir. 2000)). In order to be tangible, a claimed invention must set forth a practical application that generates a real-world result, i.e., the claim must be more than a mere abstraction (*Benson*, 409 U.S. at 71-72, 175 USPQ at 676-77). Additionally, a claim may not preempt abstract ideas, laws of nature or natural phenomena nor may a claim preempt every “substantial practical application” of an abstract idea, law of nature or natural phenomena because it would in practical effect be a patent on the judicial exceptions themselves (*Gottschalk v. Benson*, 409 U.S. 63, 71-72 (1972)). (Please refer to the “Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility” for further explanation of the statutory requirement of 35 U.S.C. § 101.)

8. In the instant case, Applicant’s claims 1- 8 comprise a judicial exception - an abstract idea in the form of a mathematical algorithm (i.e., division and calculation as

recited in claims 1-3 and 5-7). Applicant makes practical application of the mathematical algorithm in that a useful, concrete and tangible result is produced.

However, Applicant further recites calculation of a value and calculation of that value using a cited equation. The instant claims would impermissibly cover every substantial practical application of Applicant's claimed method, and thereby preempt all use of the equation. For example, non-option financial instruments can also have an implied volatility for which calculation of vega is required. The value over the long term of insurance contracts, asset portfolios, asset procurements, and a host of other business decisions can be covered by the broad scope of the claimed invention. Consequently, the claimed invention attempts to preempt all practical applications of the judicial exception which is improper under 35 U.S.C. § 101.

### ***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 1-3 and 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Makivic (U.S. 6,061,662).

As to claims 1 and 5, Makivic shows a machine comprising:

a computing device for determining implied volatility in options pricing (col. 3,

lines 1-2), wherein said device determines the implied volatility by division of the period until option expiration into sub-periods and possible underlying asset price values (see Table 2 and Table 3, wherein period to expiration is subdivided into a number of time periods until maturity), and by calculation of vega, said vega being the partial derivative of the option price with respect to the volatility at the end of at least one of said subperiods and at one or more of said underlying asset price values (see Table 2 comments identifying derivative of option price with respect to volatility; see also col. 16, line 33 defining vega similarly to kappa).

Makivic does not specifically show calculation of an exact derivative of option price with respect to volatility. However, for one of ordinary skill in the art, it would be an obvious design choice to incorporate exact derivatives as functions of partial derivatives into the mathematical means for deriving a measure of implied volatility. Since the invention fails to provide any unexpected results from its usage, use of any mathematical means, including that of the claimed invention would be an obvious matter of design choice within the skill of the art.

Further, although examiner has presented obviousness arguments with respect to the limitations asserted in the “wherein” clause above, the recitation following “wherein” is not afforded patentable weight. During examination, statements in the preamble reciting the purpose or intended use of a claimed invention must be evaluated to determine whether the recited purpose or intended use results in a structural difference (or, in the case of process claims, manipulative difference) between the claimed invention and the prior art. If so, the recitation serves to limit the claim. See,



e.g., *In re Otto*, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963) (The claims were directed to a core member for hair curlers and a process of making a core member for hair curlers. Court held that the intended use of hair curling was of no significance to the structure and process of making.); *In re Sinex*, 309 F.2d 488, 492, 135 USPQ 302, 305 (CCPA 1962) (statement of intended use in an apparatus claim did not distinguish over the prior art apparatus). If a prior art structure is capable of performing the intended use as recited in the preamble, then it meets the claim. See, e.g., *In re Schreiber*, 128 F.3d 1473, 1477, 44 USPQ2d 1429, 1431 (Fed. Cir. 1997) (anticipation rejection affirmed based on Board's factual finding that the reference dispenser (a spout disclosed as useful for purposes such as dispensing oil from an oil can) would be capable of dispensing popcorn in the manner set forth in appellant's claim 1 (a dispensing top for dispensing popcorn in a specified manner)) and cases cited therein. See MPEP § 2111.02.

As to claims 2 and 6, Makivic shows all elements of claims 1 and 5. Makivic further shows wherein said vega is calculated at the end of a plurality of subperiods (see Table 2 and Table 3, wherein period to expiration is subdivided into a number of time periods until maturity; see also col. 16, line 33 defining vega similarly to kappa).

As to claims 3 and 7, Makivic shows all elements of claims 1 and 5. Makivic further shows wherein said machine calculates implied volatility for American options (col. 2, lines 59-62 in conjunction with col. 3 lines 1-2 and 14-15).

11. Claims 4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Makivic in view of applicant's admission of Cox- Ross-Rubinstein (CRR) binomial tree as well-known in the art.

Makivic shows all elements of claims 1 and 5.

Makivic does not specifically show wherein said calculation is conducted using a Cox- Ross-Rubinstein (CRR) binomial tree.

Applicant acknowledges that CRR is an industry-wide standard for options pricing (first paragraph of applicant's detailed description of invention).

It would have been obvious to one of ordinary skill in the art to have modified the method disclosed by Makivic in order to employ calculation standards well known in the art because of their flexibility in handling different types of options.

### ***Response to Arguments***

12. Applicant's arguments with respect to claims 1-8 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carol See whose telephone number is (571)272-9742. The examiner can normally be reached on Monday - Thursday 6:45 am - 5:15 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Dixon, can be reached on (571) 272-6803. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ella Colbert/  
Primary Examiner, Art Unit 3696

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